

observed many mornings at daylight; and at Fall River, Mass., white frost on the lowland on the 19th.

### PRECIPITATION.

The rain-fall is exhibited by the figures and shading on Chart No. III, and constitutes one of the most remarkable and significant items of the month's meteorology. From the graphic exhibit of Chart No. III, it will be seen that the rain-fall in the Middle Atlantic States is normal, and that for New England is only a little in excess, while a slight deficiency was reported from the St. Lawrence valley and the Lake region. There was a deficiency of nearly half an inch on the Pacific coast, where the month was nearly rainless. There was a very marked deficiency in the South Atlantic States, and also a large deficiency in the Gulf States. In the heart of the cotton-belt, the rain-fall has been about an inch. The deficiency in Minnesota was also very great, exceeding four inches.

But in the interior, including the Ohio valley and Tennessee, and the central Mississippi and lower Missouri valleys, an equally marked excess of rain was reported. The excess was very great in the lower Missouri valley, amounting to nearly 5.00 inches, while in the Ohio valley and Tennessee the excess has been alarming and almost unparalleled, being five and a half inches more than is usual in July, or nearly three times the normal quantity that falls in that month.

In a large belt of country north of Kentucky and Missouri, the month's rain-fall ranged from 10 to 16 inches—a precipitation which has taxed the central tributaries of the Mississippi beyond their utmost drainage-power, and caused damaging floods and extensive ravages of the growing crops.

Some of the heaviest rain-falls for the month were as follows: At Louisville, 16.46 inches; at Indianapolis, 13.12 inches; at Keokuk, 12.70 inches; at Omaha, 10.00 inches; at Fort Gibson, 10.93 inches. At Beech Grove, Indiana, for the week ending August 1st, the rain-fall was 11.60 inches.

*Rainy Days.*—The number of days on which rain fell in any quantity averages about as follows: In New York and New England, 10; in the Lake region, Minnesota and Dakota, 9; in the Gulf States, 11; in the South Atlantic States, 4; from Nebraska, Kansas, and Indian Territory eastward over Iowa, Missouri, Arkansas, Tennessee, Kentucky, Illinois, Indiana, Ohio, Virginia, Maryland and Pennsylvania, 16. From many stations in the Ohio and central Mississippi valleys, over twenty rainy days, during the month, are reported.

### RELATIVE HUMIDITY.

This element averages 79 per cent. for the immediate Atlantic coast from Cape Hatteras to Maine, and is also very high, ranging from 74 to 81, from the western portions of Pennsylvania, Virginia and North Carolina, westward to Nebraska, Kansas, and Indian Territory. In the Gulf and South Atlantic States it averages 65 per cent., and in New England, New York, and the Lake region, 68. It is somewhat higher than during the month of June at the Rocky Mountain stations, being 30 per cent. at Salt Lake City, 55 at Santa Fé, 56 at Denver, and 58 at Cheyenne.

### WINDS.

The *prevailing winds* have been southerly or southwesterly at nearly all stations except those in the far Northwest and on the Lakes, where northeast and northwest winds have been very frequent. The tendency of the wind, in the Missouri valley, has been to southeast.

*Total movements of the Air.*—The larger total movements of the air for July were as follows: At Cape Hatteras, 10,586 miles; Indianola, 8,248 miles; at stations on the